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THREE YEAR EVALUATION OF VAGINAL PAPANICOLAOU SMEARS IN GYNECOLOGICAL OFFICE PRACTICE *

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Within the past decade much work has been done to further establish the Papanicolaou smear as it is applied to gynecology for use as a cancer screening and detection method. A review of the English literature covering this ten year period revealed that one hundred eighty-three papers had been published, which discussed and evaluated the technique. Most of this work, however, was done in and reported from large teaching and University Hospitals, using charity patients; and, in many instances, using research laboratory procedures and personnel to examine the test slides. Additional data of this type are reported from community or State Health Departments studies.[1, 2]

It is believed that a similar study conducted upon office patients in private practice, using the microdiagnostic facilities in the Pathology Department of a five hundred bed general hospital would be pertinent and interesting. The purpose of this paper is to present the results of such a project and to briefly compare the findings with other reports. No attempt is made to discuss treatment or the problems involved in cytological diagnosis.

* Presented at the November 1956 Meeting of the New Orleans Gynecological and Obstetrical Society.

Investigations by Ayre,[3, 4] Meigs,[5-7] and others [8-10] confirmed the early work of Papanicolaou [11] in showing that suspected cancer could be diagnosed clinically by this method. The importance of the vaginal smear as a screening procedure has been studied by Fremont-Smith,[12] Lombard,[13] and others.[14-16] This work points out the potentiality of the smear in gynecology.

Graham,[17] from a detailed study of known cases of gynecological malignancy, concluded that the vaginal smear was as reliable as a biopsy, which was taken and read in a large hospital. Laird [18] goes so far as to say that "no pelvic examination can be regarded as complete without a Papanicolaou smear".

Routine vaginal smears have been advocated by Martin,[19, 20] Brason,[21] Frech,[22] and others [23-25] as an effective means of establishing an early diagnosis which, they have shown, considerably enhanced the rate of cure.

Attention has been drawn to early diagnosis by Neibergs,[24] Pund,[26] and Doege,[27] who demonstrated that in situ malignant changes may exist in the cervix for six to twelve years before they become invasive. Fremont-Smith and Graham [24] state that "early diagnosis is possible only by means of periodic examination of supposedly well women". Their figures show that if cancer of the cervix is diagnosed in the intradermal stage it is curable in 70 to 80 per cent of cases but, unfortunately, only 1 case in 5 is diagnosed this soon. Since many studies have shown that

the large majority of women with preinvasive cancer have no symptoms, consideration should be given to the routine use of this procedure at periodic pelvic examinations. Te Linde [28] estimates that once the diagnosis of cancer of the cervix has been made and therapy instituted, 1 woman out of 4 will die from the disease.

These and other excellent reasons exist for utilizing early diagnosis as one means of lowering present mortality figures. The absence of a cytological diagnostic center in many areas, or the problems and time involved in sending slides to a distant center, may unduly prolong or in some cases be a deterrent to early diagnosis.

These circumstances indicate that it would be advantageous to compare the results which a general pathology laboratory obtained in interpretation of vaginal Papanicolaou smears to the finding of the highly specialized cytological diagnostic center. Everett,[29] a pathologist, has outlined the steps for establishment of a cytological diagnostic service under the supervision of the hospital pathologist. It is his opinion that a division of cytology can be easily added to even a small hospital laboratory, and that anyone who has had experience in examining tissue can learn to screen cytology slides.

METHODS AND PROCEDURE

The method of taking and preparing the smears is well known.[30, 31] In this study patients were instructed to omit douching for twenty-four hours prior to coming to the office. At the time of pelvic examination a small amount of material present in the posterior vaginal fornix was aspirated using the Ayres modified vaginal glass pipette [32] to which a two ounce rubber suction bulb was attached. This was done prior to any other examination and before any lubricating jelly had been introduced into the vagina. One drop of this material was then placed on a glass microscopic slide and a thin smear made by spreading it evenly using the side of the pipette. It was then fixed in a solution composed of equal parts of ether and 95 per cent ethyl alcohol for one hour.[11] The slides were then dried in air, labeled, and taken to the Pathology Department of the general hospital.

In the tissue laboratory the vaginal smears were accorded special handling only in that they were stained using the Papanicolaou method instead of hematoxylin and eosin. Materials used in this process were obtained by the hospital laboratory from a commercial supply house. The prepared slides were then screened by the junior members of the department and finally examined by the pathologist and his associate. This method of examination is used on surgical tissue, and insures several independent opinions on each specimen submitted. Members of the department believe that this has proved to be a satisfactory method of screening and diagnosing cytological studies.[33] The results obtained in this manner will be compared to statistics of other studies.

RESULTS

During a period of three years, from January 1, 1953 to December 30, 1955, all new patients and all patients who returned to the office for a periodic pelvic examination were tested by vaginal smear and included in this study. A total of 1,315 smears were taken on 1,109 patients. Eighty-eight patients were screened on two occasions, 48 patients tested three times, 6 patients tested four times, and 1 patient tested five times. Of the total number of individual tests done, 206 were performed two or more times.

The average age of the patients in this study was 39.73 years. These ages are shown by decade in Table 1.

TABLE 1
AGE DISTRIBUTION BY DECADES

Ages	Total Number	Percentage
10-20	21	1.59
20-30	320	24.33
30-40	327	24.86
40-50	384	29.20
50-60	171	13.00
60-70	77	5.85
70-80	13	.98
80-90	2	.15

The Pathology Laboratory of Southern Baptist Hospital, New Orleans, Louisiana, reported a total of 10, or 0.9 per cent

suspicious or positive smears. After clinical study, a final diagnosis of malignancy was made in 3, or 0.27 per cent of cases. This is a ratio of 1 positive to 370 negative cases. There were 7, or 0.63 per cent in which no malignancy was found after clinical investigation. In all 7 suggestive cases the pathology present was found to be an acute inflammatory process in the cervix. There were no false negative tests and, to date, no patient in the group reported as negative has developed cancer.

RESULTS OF OTHER STUDIES

A review of recent literature reveals that the series of cases published on vaginal smear can be divided into three general categories. Table 2 shows representative groups of cases screened in large institutions, and interpreted by cytological laboratories. These studies include many charity patients. Table 3 shows the series of private cases collected by clinics or groups of physicians. Table 4 shows the series reported by individuals in private practice. Interpretation of slides in private practice was done in a variety of ways as shown in Table 3 and Table 4.

DISCUSSION

For purposes of comparison the percentage of cases which were proven to warrant a final diagnosis of malignancy were averaged in each table. In the in-

TABLE 2

STATISTICS FROM LARGE INSTITUTIONS USING CYTOLOGY DIAGNOSTIC LABORATORIES

Author	Source of Patients	Number of Patients	Final Dx. Proven Ca.	% of Error	Interpretation of Slides
Papanicolaou & Traut [11]	Random cases	3,014	149 (6.44%)	0.3%	Cytology laboratory
Lombard et al [13]	Tumor Diagnostic Service of Massachusetts Dept. of Health	2,876	141 (4.93%)	4.0%	Cytology laboratory
Skapier [34]	Strang Cancer Prevention Clinic of Memorial Hospital, N. Y.	7,777	21 (.27%)	Not reported	Cytology laboratory
Meigs et al [5]	Massachusetts General Hospital and private patients	1,559	154 (9.87%)	4.0%	Cytology laboratory
Ayre [35]	Cancer Cytology Center of Dade County Cancer Institute, Miami, Fla.	3,542	61 (1.72%)	Not reported	Technician screening, Pathologist Cytologist
Haynes et al [36]	University of Texas and Parkland Hospital	6,816	224 (3.28%)	Not reported	Cytology laboratory

TABLE 3

STATISTICS FROM CLINIC GROUPS IN PRIVATE PRACTICE

Author	Source of Patients	Number of Patients	Final Dx. Proven Ca.	Interpretation of Slides
Kimmelstiel et al [37]	Community Cytology Laboratory (County Med. Soc. & Am. Ca. Soc.)	22,008	354 (0.9%)	Cytology laboratory Pathologist
Martin et al [19]	Gynob Clinic Group (8 men) San Diego County California	11,207	80 (0.71%)	Technician screening, Cytology lab. in office
Doege [27]	Marshfield Clinic & Private Practice Marshfield, Wis.	3,000	31 (1.3%) (Ca. in situ only)	Slides sent to Cytologist

TABLE 4
STATISTICS FROM INDIVIDUALS IN PRIVATE PRACTICE

Author	Source of Patients	Number of Patients	Final Dx. Proven Ca.	Interpretation of Slides
Belleville [38] (2 yr. study)	Private Practice * Bainbridge, Ga.	112	2 (1.79%)	Sent to Cancer Detection Center
Romberg [39] (2½ year study)	Private Practice * White Plains, N. Y.	300	2 (0.67%)	Stained in office; read by "trained personnel".
Present study (3 year study)	Private Practice * New Orleans, La.	1,109	3 (0.27%)	Pathologist Southern Baptist Hospital

* Vaginal Papanicolaou smear reported taken as a routine office procedure on all periodic pelvic examinations and all new patients.

stitutional series, 4.42 per cent of cases screened were ultimately diagnosed as cancer. In private practice groups or clinics, 0.98 per cent of cases were proven to be malignant, and in the series from individuals in private practice 0.91 per cent of the cases screened were proven to be malignant.

Based upon a review of these representative series the factors which were found to have a profound influence on reported findings in each study were: (1) the age groups from which the patients screened were selected; (2) the presence or absence of gynecological symptoms in the patients studied; (3) the economic status of the patient and its influence upon the frequency of routine periodic medical examinations; and (4) the qualifications of the facility interpreting the test slides.

COMPARISON OF COST IN VARIOUS STUDIES

The questions of time required to adequately review slides, cost to the patient, and overall cost per positive diagnosis, are frequently discussed when mass screening or routine office testing is suggested. Novak [40] states that some five hundred hours of work are necessary to reveal one carcinoma. In the search for one positive smear a relatively large number of tests must be made. Lombard [25] found an incidence of less than 1 per cent positive slides in the female population who presented no gynecological symptoms. He reported less than 10 per cent in a group of patients studied who presented symptoms. The overall cost per positive diagnosis is consequently high. In this study, however, no individual patient questioned the fee of $5 which was charged by the pathology laboratory for staining and interpreting the smear. The cost of each positive smear was $1,646. Table 5 shows the cost per positive diagnosis in various studies.

TABLE 5
COST PER POSITIVE DIAGNOSIS IN OTHER STUDIES

Neibergs [41]	$150.00
Meigs [35]	$900.00
Dade County [35]	$300.00
Lombard [13]	$1,700.00
Kimmelstiel [37]	$325.00
Martin [19]	$153.00
Haynes [36]	$357.00

SUMMARY

A study of 1,315 slides from 1,109 consecutive patients, who underwent a periodic pelvic examination was screened by vaginal Papanicolaou smears. These examinations were done in private gynecological office practice during a period of three years. Cytological preparation and interpretations were done in the pathology laboratory of a general hospital. A total of 10 smears, or 0.9 per cent were reported as suspicious of which 3 smears, or 0.27 per cent were ultimately diagnosed as malignant. The results of this study are compared to the findings of six series done in university and teaching hospitals in which specially trained personnel prepared and interpreted the slides. The results are also compared to six series from private practice.

CONCLUSION

The findings of this study and the re-

sults obtained in the screening of vaginal Papanicolaou smears by the Pathology Department of a large hospital compare favorably with other representative studies, and continued use of this method of cytological interpretation is contemplated.

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CARCINOMA IN SITU OF THE UTERINE CERVIX *

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LAFAYETTE

The purposes of this presentation are two: First, to set forth precisely our working hypotheses regarding the disease of carcinoma in situ of the cervix, and second, to summarize a year's experience with the entity as occurring on a very

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active gynecologic service—the Louisiana State University Service at Charity Hospital at New Orleans. Although the medical literature bulges with reports of clinical investigation of intra-epithelial carcinoma of the cervix, there remain certain aspects of pathogeneses and clinical behavior of the disease which are not understood. Questions exist which must be resolved in the future by as yet undiscovered knowledge, yet the clinician faces now the necessity for treating patients who manifest the abnormality. While details of the cause and nature await further research, it is necessary to formulate principles of management from information presently available.

PRINCIPLES OF MANAGEMENT

General: Based on our observations and those of others we have adopted certain concepts. No claim is made for originating them. It must be admitted that they are supported by evidence much of which is circumstantial, nevertheless they seem warranted at this time:

Carcinoma in situ is clinical stage O carcinoma of the cervix.

It is the earliest identifiable stage of carcinoma.

In general it must be considered as a progressive lesion which ultimately becomes invasive carcinoma.

Although usually not reversible, there must be instances in which healing occurs spontaneously. Indeed, one wonders whether a rare invasive growth may heal spontaneously.

Diagnosis: Because intra-epithelial carcinoma does not have a characteristic appearance to the clinical examiner, its presence has been detected by other means, namely, the vaginal smear, routine biopsy, and histological study of surgical specimens removed for another reason. A fourth method of detection which will be used on this service is inspection of the cervix by colposcopy. Once the presence of the lesion is suspected by use of these methods of examination, the following requirements must be met: (1) The entire lesion must be examined histologically. (2) Microscopically, the atypical changes must be seen to extend through the thickness of the epithelial layer, and this should be as thick as normal layer of epithelium. (3) There must be no invasion of cervical

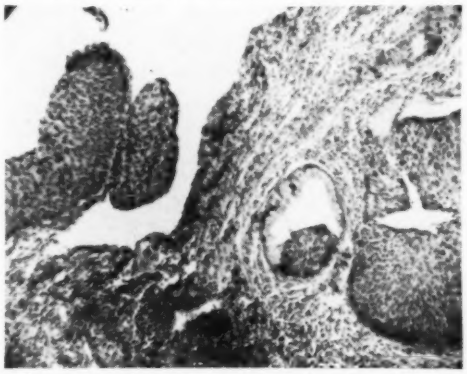

Figure 1—Typical carcinoma in situ with gland invasion. Surface growth is seen on left, displacement of glandular epithelium in two acini of a cervical gland on right. L.P.

stroma. (Downgrowth of epithelium into cervical glands is not invasion.)

These requirements are met by obtaining tissue from the suspect cervix by

Figure 2—Carcinoma in situ within endocervical canal. Note the varying thickness of the epithelial layer. Although we require full thickness growth for diagnosis of this entity, the rule is clearly not applicable in all biopsy specimens.

means of low amputation or conization with scalpel. Tissue removed by electrocautery is not acceptable for histological study. In preparing the tissue blocks, the specimen should not be incised and laid out flat on the trimming board. It should be fixed as received from the operating room and then trimmed into blocks cut

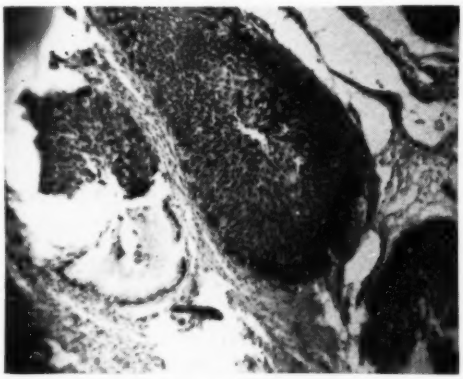

Figure 3—Invasion of glands. There is no columnar epithelium in the center gland but the pattern is identical to that in other areas where both gland and squamous epithelium are present. L.P.

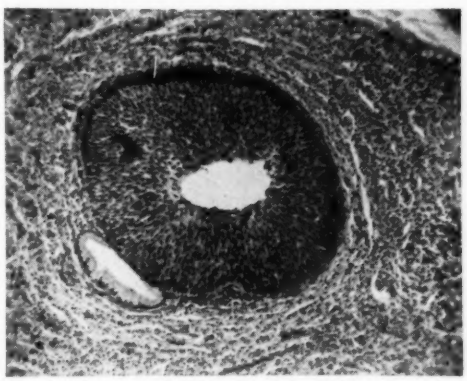

Figure 4—Replacement of glandular by anaplastic squamous epithelium. L.P.

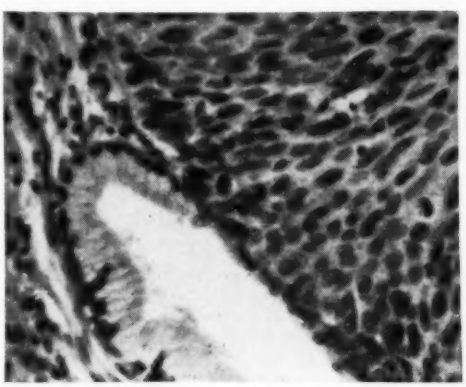

Figure 5—Crowded anaplastic growth of squamous epithelium with remnants of columnar epithelium. At least 6 mitotic figures are seen in this portion of a high power field.

radially around the canal in order that the epithelium is not cracked, wrinkled, and peeled in preparation. Thus the crucial epithelium-stroma relation can be studied as it originally existed.

We have set up a team within the Department of Obstetrics and Gynecology to carry out a diagnostic routine consisting of clinical, cytological, colposcopical, and

Figure 6—A lesion with cytologic detail identical with carcinoma in situ. The growth has a heavy keratin layer and abnormal eleidin pigment layer. Colposcopically this lesion is seen as a detectable change in the portio epithelium of the cervix. L.P.

histological examinations all very closely correlated. We feel that this approach is necessary in order to individualize each case while maintaining standards of diagnosis.

Treatment: After establishment of the correct diagnosis of carcinoma in situ we recommend treatment by hysterectomy, without removing ovaries. In instances in which pregnancy co-exists with carcinoma in situ we modify management by deferring treatment, observing, and re-evaluating the case at six weeks postpartum. The colposcope will be particularly valuable in studying these patients.

EXPERIENCES WITH CARCINOMA IN SITU

Material Studied: In the year 1954 on this service 18 patients came under study for carcinoma in situ. The diagnosis of invasive carcinoma of the cervix was made 85 times. Carcinoma in situ was diagnosed as occurring during pregnancy one time while invasive carcinoma and pregnancy were found in 2 patients. The

number of deliveries in the same time interval was 4,713.

Observations: Table 1 shows the diagnostic method which brought these patients under study. Table 2 lists the final diagnosis. It is to be noted that the margin of error in the initial biopsy is more than slight, if one counts an unconfirmed positive biopsy of carcinoma in situ as a probable error. We think this a safer assumption in most instances than the speculation that the entire lesion was small enough to have been removed by the act of biopsy, or that it regressed in the interim following biopsy. Table 4 displays the definitive treatment carried out. Eleven patients had total hysterectomy. Two had full radiation because there was some doubt as to presence of real invasion, though it is our feeling that these patients should be classed as having noninvasive lesions. Two patients had removal of a cervical stump.

TABLE 1
TENTATIVE DIAGNOSIS MADE BY

Initial biopsy	14
Subsequent biopsy	2
Hysterectomy	2
	18

TABLE 2
FINAL DIAGNOSIS, 18 PATIENTS

Carcinoma in situ proven	14
Carcinoma in situ excluded	3
Lost to follow-up after biopsy	1*
	18

* Admitted to mental hospital.

TABLE 3
AGE AND PARITY, 14 PATIENTS WITH CARCINOMA IN SITU

Ages: Range: 27 - 64 yrs.	Median: 38 yrs.
Parity: Range: 0 - 14	Multip: 11
	Primip: 3

TABLE 4
METHOD OF TREATMENT, 14 PATIENTS WITH CARCINOMA IN SITU

Total hysterectomy	11*
Removal of stump	2
Radiation	2*

* One patient treated by radiation and hysterectomy.

TABLE 5
COMPLICATIONS OCCURRING AMONG TREATED PATIENTS

Post operative intestinal obstruction	1
Invasive Carcinoma	1

Complications: (Table 5.) Postoperative intestinal obstruction occurred in a patient who had total hysterectomy, an inevitable accompaniment of abdominal surgery in a small percentage of cases.

Invasive carcinoma developed in one patient who had a cervical stump removed as definitive treatment for carcinoma in situ. In retrospect, it is our opinion that the lesion must have been an invasive one at the time of removal and that the original diagnosis of carcinoma in situ was in error. We think a mistake occurred due to examination of insufficient number of sections, since only three cuts were made.

CONCLUSIONS

Our observations and experiences, generally, tend to confirm our concept of the disease of carcinoma in situ as outlined in the opening comments. We have difficulty, as do most others, in arriving at a completely satisfactory diagnosis in some instances, as for example, distinguishing between gland invasion and stromal invasion. Our tentative diagnosis from initial biopsy is erroneous often enough that we are wary of resting the diagnosis on the reading of a few sections of tissue. We have a standing rule prevailing whenever there is doubt about the diagnosis: Cut more tissue.

Calculation of rates and incidence is not justified in analyzing this small sample of disease but certain trends may be noted. We detect new cases of carcinoma in situ almost as frequently as we find stage I carcinoma. The median age of these 14 patients was 38 years. A small but definite number of instances of carcinoma in situ occur in pregnancy, a coincidence to be expected since both occur in the same age patients, and also since invasive carcinoma is known to co-exist with pregnancy.

In managing carcinoma in situ, care must be taken not to undertreat, such as with cervical amputation alone. Such an error would be more hazardous to the patient than one of overtreatment.

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THE DIAGNOSIS AND TREATMENT OF URETHRAL DIVERTICULUM IN FEMALE PATIENTS *

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THEODORE BRADLEY, M. D. †
NEW ORLEANS

Urethral diverticulum represents an unusual and challenging diagnostic problem. The present study comprises a review of 51 cases from the Charity Hospital of Louisiana and two private hospitals in New Orleans from January 1950 through 1955.

The adult female urethra, a fibromuscular canal measuring 3.5 to 4.0 cm. in length, is located in the anterior vaginal wall adjacent to, and somewhat fixed to, the posterior surface of the symphysis pubis. The mucosal lining of the urethra consists of transitional epithelium in its proximal three-fourths and squamous epithelium in its distal one-fourth. Huffman [1] has shown clearly the presence of many tube-like glands in the walls of the urethra, the largest of which are called Skene's glands and the smaller, paraurethral glands. The ducts of the paraurethral glands open, for the most part, into the lateral and dorsal surfaces of the urethral lumen. The female urethra and its paraurethral glands and the prostatic portion of the male urethra are embryologically homologous.

The adult female urethra is frequently subjected to trauma and irritation, such as is associated with childbirth, coitus, catheterization, or infection. Thus, the paraurethral glands often become damaged and infected, and abscess ensues, with rupture along the line of least resistance into the urethra and consequent formation of a urethral diverticulum. Some believe diverticula to be congenital in origin and, in fact, Parmenter [2] and McMahon [3] cite instances in which evidence in support of this concept is highly

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suggestive, but the consensus still favors the acquired mode of development.

INCIDENCE

The incidence of diverticulum of the urethra is definitely increasing because increased interest in this subject during the past five to eight years has improved diagnosis. In 1944, Menville and Mitchell[4] reported 13 cases among a total of 510,585 general admissions at the New Orleans Charity Hospital from 1923 to 1944. Wharton and Kearns[5] of the Johns Hopkins Hospital, reported a ratio of 1 such case to 2300 gynecologic admissions during the period from 1890 to 1949, but most of the cases were concentrated in the last ten years of this period. In the present series, a ratio of 1 urethral diverticulum to 430 gynecologic admissions was found at the New Orleans Charity Hospital during the period 1940 through 1955.

DISTRIBUTION BY AGE, COLOR AND SEX

Patients in this series ranged in age from 17 to 56 years (mean 38 years), a finding that concurs with previous reports. One case of diverticulum has been reported in a 73 year old woman.[6] The ratio of colored to white patients in the present series is 3 to 1, which agrees favorably with the findings of Menville and Mitchell.[4] Only 2 instances of diverticulum were found in men, an observation that would support the belief that injury is the etiologic factor, since the female urethra undergoes considerably more trauma than the male urethra. Parity definitely influences the incidence; the present series includes 45 parous and only 6 nonparous women.

PATHOLOGIC ANATOMY

The majority of urethral diverticula arise from the middle and posterior one-third of the urethra. Since the opening is usually into the floor and lateral walls of the urethra, the position of most diverticula is inferior and lateral to the urethra and closely applied to it. Rarely, the diverticulum may arise from the ventral surface of the urethra and, thus, a sac may be encountered in the space of Retzius.[7] There may be more than one opening into the urethra, and the diverticular sac may straddle the urethra (Fig. 1a and 1b). Its size can vary from less than 0.5 cm. to 8 to 10 cm. in diameter. An aberrant or ectopic ureter can open into the diverticulum, as reported by Charles L. Willmarth[8] in 4 cases. The wall of the diverticulum is usually composed of chronically infected fibrous tissue with a granulation tissue lining or squamous, transitional, or cuboidal epithelium, depending upon the duration and extent of infection. Organisms usually cultured out of the sac are of the coliform group, hemolytic streptococcus, and staphylococcus.

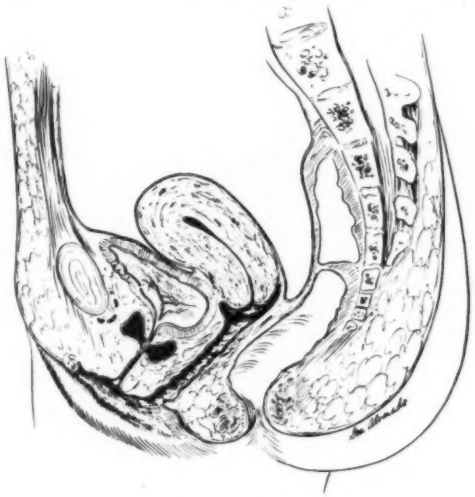

Figure 1-A

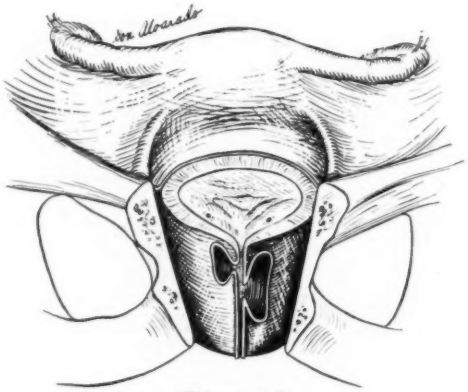

Figure 1-B

SIGNS AND SYMPTOMS

A high index of suspicion should be

aroused by a history of long-standing or recurring bouts of urinary tract infection or episodes of dysuria, pyuria, hematuria, bladder and vaginal pain. Dyspareunia is a common accompaniment of this abnormality, and many patients complain of a foul discharge or a desire to void after coitus. Approximately 35 per cent of the patients in the present series complained of dribbling after micturition. This abnormality may even cause eneuresis in children. An observant patient may occasionally notice a mass in the anterior vaginal wall. Other complaints include suprapubic and pelvic pain, a feeling of fullness in the lower abdomen and vagina, and nocturia (Table 1).

TABLE 1
SYMPTOMS AND SIGNS IN 51 PATIENTS WITH URETHRAL DIVERTICULUM

	No. of Patients
Previous urinary tract infection	23
Dysuria	27
Dribbling after voiding	17
Dyspareunia	7
Pelvic pressure and pain	17
Hematuria	7
Stress incontinence	6
Urgency	5
Frequency	3
No symptoms	2
Suburethral mass	42
Pus, blood, or urine expressed	22

DIAGNOSIS

Examination for this condition should be routine practice in all gynecologic examinations, just as examination of the vulvovaginal area is made for Bartholin gland abnormality. With the finger of one hand holding the vulva apart, the index finger of the other hand is gently passed along the dorsal surface of the urethra (Fig. 2a and 2b). If a diverticulum is present, a mass will be palpable to the side or beneath the urethra. The ability to express pus, blood, or urine from a pultaceous urethral mass is pathognomonic of diverticulum. In questionable cases, careful digital examination of the urethra over a No. 22 or 24 urethral sound will permit detection of a smaller mass and palpation of a defect in the wall of the urethra, which represents the diverticular opening.

Figure 2-A

Figure 2-B

After a careful history and physical examination, the use of urethrography is next in importance for accurate diagnosis. In recent times, the Gynecological service of the Louisiana State University Medical School has been using as a diagnostic aid the Trattner catheter, a three-way catheter blocked at its distal end (Fig. 3a and 3b). With a 2-balloon system, both

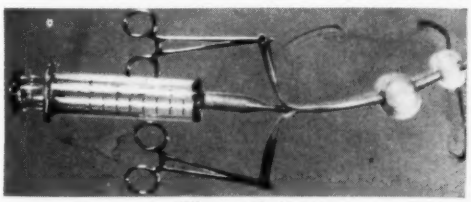

Figure 3-A

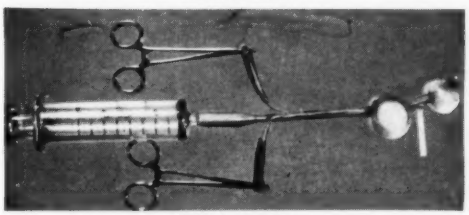

Figure 3-B

the internal and external meati are blocked. An opaque substance (Salpix) is injected into the catheter under moderate pressure until the mass is felt to be distended. The dye enters the urethral channel by way of the dorsally-placed aperture. Every attempt should be made to distend the diverticulum. At this time, anteroposterior and lateral roentgenograms of the pelvic area are taken with the patient in the reclining position. This determines the size of the diverticulum, its location in relation to the urethra and bladder, the number of diverticular openings, and possibly, but rarely an ectopic or aberrant ureter (Fig. 4a and 4b). In doubtful cases, the diagnosis can be definitely settled by this method, and we have done so in 2 cases. Small openings can be overlooked with a panendoscope. In large diverticula or diverticula closely related to the bladder, contrast air studies may be helpful. Furthermore, roentgenograms of the pelvic area may demonstrate stones. Following this, a complete urologic survey should be made, including panendoscopic examination of the urethra for divericular openings, aspiration of contents for culture, and examination for other possible abnormalities of the genitourinary tract.

Figure 4-A

Figure 4-B

DIFFERENTIAL DIAGNOSIS

The differential diagnosis should include all masses of the anterior vaginal wall. The more common conditions that might cause confusion are: (1) urethrocele and chronic urethritis, (2) suburethral cyst, (3) abscess of cyst of Skene's gland, (4) cyst of Gartner's duct, (5) diverticulum of the bladder, (6) endometriosis, and (7) varicosities. Neoplastic lesions of the urethra, Skene's glands, and anterior vaginal wall must also be considered.

COMPLICATIONS

Complicating pathologic conditions, although not numerous, are important. Wharton and Kearns[5] have reported that 10 per cent of all diverticula are associated with the presence of stones; 4 such cases are included in the present Charity Hospital series. Adenocarcinoma has been reported in a few instances, and 2 cases of spontaneous urethrovaginal fistula were found in the present series.

TREATMENT

It is generally advocated that all diverticula of the urethra should be removed, unless age, health, and other conditions preclude operation. Asymptomatic diverticula will eventually lead to difficulties, and conservative therapy with antibiotic drugs, periodic emptying by massage, and hot baths have no place in definitive therapy of diverticula. In patients with an acute diverticular abscess, incision and drainage may be accomplished through the vagina. Furniss[9] has postulated that some diverticula are due

to urethral stricture, and any such abnormality should be corrected by dilatation, meatotomy or both.

In 1936, McNally[10] described an operation for the radical treatment of urethral diverticula, consisting of excision of the lesion. His technic, or modification thereof, is now accepted as the operative method of choice in many clinics. In the Gynecological service of the Louisiana State University Medical School, we have been utilizing a ten day period of preliminary therapy in infected cases. Three grams of cortisone or comparable amounts of related steroids are administered during this period to reduce the inflammatory reaction about the sac and facilitate dissection. Daily digital emptying of the sac, sitz baths, and administration of appropriate antibiotic drugs are recommended. At the end of this time, the operative procedure is undertaken.

In preparation for the operation, the patient is placed in an exaggerated lithotomy position. A No. 8 or No. 10 Hegar dilator is placed in the urethral canal and is used to outline the urethra as well as to displace the urethra and diverticulum forward for greater accessibility. A longitudinal incision is made into the vagina over the sac, and the vaginal mucosa is dissected laterally. The pubocervical fascia is dissected from the mucosa, as in anterior vaginal repair, to free the urethra and the diverticular sac. The dissection of the sac is continued as completely as possible, and the sac is opened. At this point, a procedure described by Moore[11] in 1952 may be utilized: A Foley catheter, with the tip removed, may be inserted into the sac through a stab wound, after which the opening is closed about the catheter with a pursestring suture. By traction on the catheter, the sac containing the distended balloon is better outlined, and the dissection is facilitated. After the sac is opened, the Hegar dilator can be seen shining through the opening in the urethral wall. At this time it is important to determine whether or not there is more than one opening into the sac. Furthermore, the size of the opening should be noted to facilitate dissection of the sac and prevent damage to the urethral walls. The excess part of the sac is excised, and the opening is closed with interrupted atraumatic 000 catgut sutures. The Hegar dilator will prevent too tight a closure. A second layer of chromic 00 is used to approximate the pubocervical fascia, and, finally, the vaginal mucosa.

Edwards and Beebe[12] have described a new operative technic, consisting in incision of the urethral floor from the external meatus to the diverticular opening. They contend that such incision of the urethral floor affords increased exposure and thus permits prompt identification of the orifice, or orifices, of the diverticulum.

Occasionally, complete dissection of the sac becomes difficult. In such cases, it is sufficient to outline the opening clearly and close it, as described. The lining of the remainder of the sac can be destroyed with phenol or with an electrical unit.

Gilbert and Cintron[7] described a technic for the operative treatment of a diverticulum in the space of Retzius. With the use of the panendoscope, the opening is located, and a ureteral catheter is threaded into the sac. The urethra is approached by the suprapubic route. With the ureteral catheter coiled about, the diverticulum can be dissected and excised. In nulliparous patients, the Schuchardt incision will greatly enhance exposure.

Routine use of an indwelling catheter has not been necessary; most patients will void without difficulty. Some may require one or two catheterizations, which should be done gently with the use of a small catheter. By elimination of the indwelling catheter, the duration of hospitalization can be reduced 40 to 50 per cent (Table 2).

POSTOPERATIVE COMPLICATIONS

Postoperative complications are rare. Recurrences and formation of fistulae may occur but can usually be avoided by good operative technic with the use of the layer method. Incontinence is usually

TABLE 2
TYPE OF TREATMENT IN 51 PATIENTS WITH URETHRAL DIVERTICULUM

	No. of Patients
Excision of diverticulum	
With postoperative catheter	20
Without postoperative catheter	11
Vaginal hysterectomy—Anterior repair	7
Schuchardt incision	2
Incision of urethral floor	1
No operation	6
To be operated	4

temporary and disappears within one to three weeks.

SUMMARY

Urethral diverticula are not rare, the incidence having increased recently with greater awareness of the condition and improved diagnostic methods. The etiologic role of trauma in this condition is suggested by the greater frequency observed in women, in whom the urethra is subjected to considerable injury. The use of the Trattner catheter in urethrography will assist materially in establishing the diagnosis. All urethral diverticula should be excised, if feasible. The importance of preliminary therapy with cortisone, manual emptying, and appropriate antibiotics is stressed.

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TUBERCULOSIS; EYE *

LEON F. GRAY, M. D.
SHREVEPORT

Tuberculosis is an infectious disease caused by the tubercle bacillus (*Mycobacterium tuberculosis*) and characterized by the production of tubercles.

The etiological agent of human tuberculosis is the *Mycobacterium tuberculosis.* Of the several members of this group of bacteria, only two are important, since none of the others have been shown conclusively to give rise to disease in man. Human tuberculosis is produced either by *Mycobacterium tuberculosis* (homonis) or by *Mycobacterium tuberculosis* (bovis). Both of these organisms produce disease in the lower animals as well as man.

The mature organisms produce a highly resistant, waxy covering which in itself is harmful. It is this waxy coat that gives to the tubercle bacillus its most distinctive physical and chemical character, the ability to absorb specific dyes and to retain them when the stained bacilli are treated with acids.

MODE OF ACTION OF THE TUBERCLE BACILLUS

It produces injury to tissues by a variety of means, and both living and dead organisms are effective, but not in the same way. Only the living organisms are capable of producing the progressive disease, but dead bacilli may produce initial focal lesions that are virtually indistinguishable from those produced by living organisms.

There is no indication that the tubercle bacillus produces an exotoxin, nor does it produce an endotoxin, in the ordinary sense of the term.

Its lethal effect arises chiefly out of the fact that it sensitizes the tissues to its own products of disintegration to such an extent that the tissues become highly susceptible to injury and are killed when subsequently they are exposed to these organisms or to their chemical derivatives.

* Presented at the Seventy-sixth Annual Meeting of the Louisiana State Medical Society, Alexandria, La., April 24, 1956.

A possible secondary injury must be added to the above, which is produced by toxic products of tissues which disintegrate following primary injury through the sensitization mechanism.

Anderson [1] and others in this field have isolated from the tubercle bacillus, three important fractions, namely, lipoids, proteins and carbohydrates. Sabine [11] and her coworkers have made extensive studies of the specific action of these fractions upon animal tissues.

The response of animal tissues to fractions of the tubercle bacillus, as noted above, are as follows: The lipoids, of which the most important constituent is phthioic acid. The carbohydrates are principally polysaccharides. The proteins are not all alike, some being antigenic while others are not.

The lipoid phagocytizes the macrophages. The phagocytosed lipoid acts as an alternative stimulus to the cells and causes them to take on an epithelioid appearance. Some of these cells are converted into multinucleated giant cells, through an increase in size. This is due to phthioic acid, primarily.

The polysaccharide fraction of the bacillus is highly chemotactic for the polymorphonuclear neutrophillic leucocytes. It is worth noting that the polysaccharides also are highly toxic for the neutrophillic leucocytes, a condition that may have much to do with characteristic disappearance from the lesion in the early stages of its development.

Repeated injections of protein derived from tubercle bacilli provoke a pronounced response of plasma cells in the injected areas. Each one of the derivatives of the organism calls out these cells, but the plasma cell reaction apparently is more pronounced and more regular in its appearance following the injection of the protein fraction. Of far greater importance than the morphological reaction to the proteins is the immune response of the tissues to this fraction. In the nontuberculous animal a first injection of protein provokes no visible response, but in the tuberculous animal the condition is quite different. The tissues of the tuberculous animal are progressively altered by their continuous association with tubercle bacilli and their derivatives, and finally they attain a high degree of sensitization to these antigens. The result of this is that the most violent acute inflammatory reaction occurs when protein derived from tubercle bacilli is injected into the tuberculous animal. Although this sensitization (tuberculous allergy) takes place only through actual tuberculous infection or through the introduction into the tissues of the whole bodies of dead tubercle bacilli it has long been thought to be related specifically and, most likely, exclusively to the protein component of the bacillus.

OCULAR TUBERCULOSIS

It may be taken, therefore, that with the exception of acute miliary tuberculosis, ocular tuberculosis occurs with the greatest rarity in the presence of active tuberculosis elsewhere, but rather in apparently normal, healthy well-nourished individuals with a *healed or benign tuberculosis infection.* In some organ, usually the lymphatic system in the chest, more rarely in the lungs, the glandular depot, even though it is usually slight, quiescent, clinically healed or calcified, being capable of disseminating infection after the primary pulmonary focus has healed, presumably by the occurrence of an intermittent bacillaemia which is usually without systemic significance.

The incidence of ocular tuberculosis is typical of tuberculosis generally. It can affect any part of the eye ball, its adnexa or the optic nerve.

The part of the eye in which we see it most, is the choroid. Here, it occurs in acute or miliary and chronic forms. Miliary tubercles are found in the late stages of acute miliary tuberculosis, especially tuberculous meningitis. Ophthalmoscopically they appear as round, pale yellow spots, most frequently observed in the neighborhood of the disc, though any part of the choroid may be attacked. Generally

only three or four spots are seen, but as many as sixty or seventy have been found. They vary in size from pin-point specks to 1 or 2 mm. in diameter. They usually project slightly, so as to raise the retina but the inner surface is often quite flat, while the outer surface projects into the retina. They afford the most important diagnostic evidence of tubercle in cases of meningitis and obscure general disease. Microscopically they consist of typical giant cells, containing a variable number of tubercle bacilli.

Chronic tubercle may occur as a diffuse or disseminated inflammation affecting large areas or the whole choroid, and characterized by the extensive development of granulation tissue; or, more rarely, as a solitary or conglomerate mass, simulating sarcoma, but usually showing definite signs of inflammation, e.g., edema of the retina, vitreous opacities, etc. The mass consists of granulation tissue containing giant cells, spreads until it involves the retina and may finally fill the posterior part of the globe.

TREATMENT OF OCULAR TUBERCULOSIS

The treatment of this disease is outlined in detail in two very fine articles by Kratka [8] and Woods.[12] Both treatments are excellent. You will find the treatment which Dr. Woods uses outlined below.

This concept of the pathogenesis of ocular tuberculosis gives us our clue to the treatment of the disease. The first step is to conserve and promote the native and acquired resistance. There is little that can be done on this point other than regulation of the personal hygiene, proper diet, control of intercurrent infections, elimination of foci of infection, and any other therapy indicated by the individual needs of the patient.

The second point is the estimation of the degree of tissue hypersensitivity present. If there is a high degree of tissue reactivity to tuberculin or evidences of acute inflammation in the eye, the sensitivity of the ocular tissues to tuberculoprotein may be assumed to be high. Desensitization therapy with tuberculin is then indicated. It should be undertaken with the realization that it is a long and tedious process, that it will take months to achieve tissue desensitization, and that once such desensitization is attained, tuberculin must be continued for a long period to prevent a return of the hypersensitivity. The dose of tuberculin should always be below the point of reaction of the individual patient, and all local and focal reactions should be avoided. Such desensitization therapy is indicated for the reason that should the patient have a recurrence, such recurrence will take place in insensitive tissue and the destructive phases of the tuberculous lesion be avoided.

The final, and most important step is the direct attack on the bacilli. To this end there are available isoniazid, streptomycin, and para-aminosalicylic acid or thiazolsulfone (Promizole) as adjuvants. The specific therapy consists of a mixture of streptomycin and dihydrostreptomycin, 1.0 gm. every second day; para-aminosalicylic acid, 12 gm. daily, and isoniazid, 300 mg. daily in divided doses. After five days the dose of isoniazid may be reduced to 150 mg. Treatment should be continued for a minimum period of forty-two days, and longer if a full therapeutic response is not obtained. The patient should be carefully watched for any side-effects, and if such are noted the drug probably responsible is either omitted entirely or the dose greatly decreased. If para-aminosalicylic acid is believed responsible, thiazolsulfone may be substituted.

With such a regime, in cases of undoubted ocular tuberculosis, some clinical improvement is usually noted within two weeks. The absence of any therapeutic response within three weeks throws doubt on the validity of the original diagnosis. Even with a favorable initial response and complete control of all clinical evidence of activity there are recurrences of the ocular disease in about 25 per cent of the patients adequately treated. For this reason, desensitization therapy is indicated to lessen the severity of such recurrences

and prevent the destructive phases of the lesion.

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DISCUSSION

Dr. Pegram L. McCreary (Lake Charles): The striking characteristic of ocular tuberculosis according to Wood is the pleomorphism of the lesions, that is, the widely different clinical pictures produced in the eye by infection with the tubercle bacillus. These lesions fall into four general groups, that may often merge one into the other.

First, ocular tuberculosis may be little more than a foreign body reaction. An example of this lesion is miliary tuberculosis of the iris, in which there may be a minimum of inflammation and no tissue destruction. The tubercles may be absorbed or hylinized leaving little or no residua.

Second, the lesion may be characterized by sharp inflammation, but the process quickly becomes circumscribed and heals. Recurrences at or near the original lesion are frequent. Examples of this type are sclerokeratitis of young adults, and what de Schweinitz has aptly termed "circumscribed plastic choroiditis"

Third, tuberculous eye disease may be characterized by a long drawn out chronic course, with exacerbations and remissions and sometimes a slowly progressive tissue destruction. An example is the chronic tuberculous uveitis of adults.

The fourth type of ocular tuberculosis may take on the picture of a violent rapidly spreading inflammation with marked tissue destruction, necrosis, and caseation, sometimes terminating in rupture of the globe. An example of this is the rapidly spreading chorioretinitis of children and young adults, and caseating tuberculomas.

There are many difficulties encountered in deciding whether a particular case of endogenous chronic endophthalmitis is or is not tuberculous. Consequent upon these difficulties are large and unresolved uncertainties as to whether tuberculous infection is responsible for a large or a small fraction of the cases in which it may reasonably or remotely be suspected. These doubts do not, however, justify the conclusion that ocular tuberculosis does not exist. There are cases in which ocular tuberculosis can be established with a high degree of certainty, and the proper treatment instigated as has been so well outlined by Dr. Gray.

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TULAREMIA
AN ANALYSIS OF ONE HUNDRED FORTY-SEVEN CASES

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SHREVEPORT

Tularemia is endemic in northwest Louisiana, and Confederate Memorial Medical Center of Shreveport which serves this area offers unusual opportunities to study the disease. Because of the frequent occurrence of tularemia in this area considerable experience has been accumulated, and it is believed that some of the impressions gained are not generally appreciated. It is the purpose of this presentation to review the clinical material in this hospital and to point out some manifestations of the disease which appear to be fairly common, but have not been adequately emphasized.

The data presented are the result of an analysis of 147 cases seen from June 1948 to June 1955. Occasional reference for the sake of comparison is made to a previous unpublished study by one of us (F.T.D.) which included 169 cases seen from January 1934 to January 1948.

In the present series all cases met one of the following diagnostic criteria. In 86 cases the diagnosis was proven by a rising titer of serial tularemia agglutinations performed at least forty-eight hours apart.

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§ Clinical Professor of Medicine, Post-Graduate School of Medicine, Louisiana State University.

In 52 cases there was a typical clinical picture of tularemia with a single high agglutination titer. In these, all had agglutinations of 1:160 or greater and only 3 had titers of less than 1:1280. In 9 cases autopsy findings alone were diagnostic. One of the autopsied cases was further proven by guinea pig inoculation.

INCIDENCE

During this study period there was an average of 21 cases of tularemia per year; during the same period the total hospital admissions averaged 22,000 per year. Eighty-nine per cent of the tularemia cases were in the colored race, though only 65 per cent of all hospital admissions were colored. Men were affected more often than women by a ratio of four to one (117 to 30). There were 100 colored males, 31 colored females, 15 white males, and only 1 white female. The age of the patients ranged from three to eighty years and there was an even spread of cases throughout the decades of life.

VECTORS

A host of vectors may transmit *Pasteurella tularensis*. In this series, however, only three vectors were encountered: ticks, rabbits, and squirrels. For an analysis of the vectors and the type disease they caused, refer to Table 1.

TABLE 1

TULAREMIA VECTORS

TYPE DISEASE	VECTORS					
	Tick	Rabbit	Squirrel	Unknown	Totals	Per Cent
Ulceroglandular	37	6	2	23	68	46
Typhoidal	5	5	1	42	53	36
Glandular	3	0	0	19	22	15
Oculoglandular	0	1	0	3	4	3
Totals	45	12	3	87	147	—
Per Cent	31	8	2	59	—	—

It is interesting to note, and should be emphasized, that in 87 cases (or 59 per cent) no vector could be established. In only the ulceroglandular form was the association of a vector with an ulcer and lymphadenopathy a fairly consistent and reliable clue in the diagnosis. In the other three clinical types of tularemia failure to obtain a vector history was the rule. The failure to determine a vector contact, therefore, does not constitute evidence to rule against the diagnosis of tularemia, and this should be kept in mind when dealing with a fever of undetermined origin.

INCUBATION PERIOD

Generally the incubation period was difficult to ascertain, particularly in view of the large number of cases in which no vector could be established. In only 32 of the 147 cases could an incubation period be determined with any degree of accuracy. In these cases it ranged from less than one day to fourteen days with a mean of five and seven-tenths days and a median of three days.

GENERAL

The study of these cases has shown that tularemia is a febrile disorder with rather protean manifestations. It may be seen as a severe, toxic, overwhelming infection but may also occur as a mild disorder with only lymphadenopathy as a complaint.

In this study, for convenience of discussion, the disease has been divided into four clinical types: ulceroglandular, typhoidal, glandular, and oculoglandular.

ULCEROGLANDULAR TULAREMIA

The ulceroglandular form was the most common type. It occurred in 68 of the 147 cases (or 46 per cent) of the total. It was the easiest of the four types to diagnose because of the characteristic appearance of a superficial ulceration (not always single) with regional adenopathy. A vector history was established in 45 of the 68 cases and a correlation between the site of the ulcer and the type vector could be exhibited. In those cases transmitted by the rabbit or squirrel the primary lesion was located on the hand; when the tick was the vector the ulcers usually appeared on the trunk, especially in the groin or axilla. Ulcers of the perineum and external genitals were not infrequent and their occurrence in these locations necessitated careful inspection for discovery. An almost constant sign or symptom was fever, which tended to be septic in type in almost half of the cases (30) with irregular spikes from 102 to 104° F. Fever in other cases was described as intermittent (16) and low grade or variable in others. Chills were noted in half of

the patients, usually in those with septic temperature.

Other common manifestations were malaise, weakness, and headache. Delirium, coma, pharyngitis, and jaundice were rare manifestations.

TYPHOIDAL TULAREMIA

Typhoidal tularemia was diagnosed in patients who demonstrated no ulcers, lymphadenopathy, or eye lesions. It was easily the most dramatic, the most serious and the most difficult to diagnose. Fifty-three (36 per cent) of the total cases were of the typhoidal variety.

These patients were usually admitted to the hospital acutely ill with fever, chills, and malaise. Prostration (11), abdominal pain (7), delirium (5), dehydration (5), pharyngitis (4), meningismus (4), vomiting (4), and diarrhea were also noted. The diagnostic difficulties associated with such a picture are apparent. A history of vector contact was of little value because a definite vector was noted in only 11 instances (20 per cent).

Pulmonary involvement was pronounced in this group. Forty per cent showed pneumonia or pleural effusion. The throat was frequently involved, varying from pharyngitis to ulcerative tonsillitis. Diarrhea was recorded in 17 per cent of the typhoidal cases and was limited to this form of the disease. Diarrhea was usually "loose and watery" but once was described as bloody.

The fever in this type disease tended to be septic (54 per cent) and quite high. Thirty-two (60 per cent) of these patients had temperature of 104° or greater. Temperature consistently below 103° was rare (only 3 cases).

GLANDULAR TULAREMIA

Glandular tularemia occurred in 22 (15 per cent) of the cases. These cases were characterized by adenopathy without ulceration and the patients usually had a rather vague illness of some weeks duration before entering the hospital. A vector was established in only 3 cases. The most usual complaint was related to adenopathy and in 8 (36 per cent); there were no other complaints. The nodes were regional and most commonly axillary (10); cervical, and inguinal nodes were also frequently involved. Occasionally the nodes suppurated and surgical drainage was necessary. The lymphadenopathy was of rather long duration, persisting from three weeks to more than four months.

Fever was noted in all patients who had symptoms other than lymphadenopathy (59 per cent). Chills occurred in one-half of the patients who had fever. In those patients with fever and chills, there were other constitutional symptoms such as malaise and weakness.

OCULOGLANDULAR TULAREMIA

The oculoglandular form occurred 4 times, and once the patient apparently inoculated his eye himself. In this case, which was initially ulceroglandular, there was an ulcer on the index finger with epitrochlear nodes. While on treatment the patient rubbed his eye, and after an undetermined period developed severe conjunctivitis. The eye cleared on no therapy other than that afforded him for systemic tularemia, and it was felt that he had tularemic conjunctivitis.

In the other 3 cases there was also conjunctivitis. Submaxillary nodes were present in conjunction with the eye lesions. In all cases the clinical picture was that of a septic illness with high fever, chills, malaise, and weakness. In no cases were there any late eye sequelae. In one case with unilateral eye involvement, erythema multiforme and ulcerative stomatitis were also present.

MANIFESTATIONS DESERVING EMPHASIS

The occurrence of pneumonia, throat involvement, and renal involvement appeared frequently enough to deserve special mention. Pneumonia occurred in 19 per cent of all cases. The pneumonic manifestation appeared most frequently in the typhoidal type of disease with 41 per cent of this group being involved. Only 5 per cent of the ulceroglandular cases showed pulmonary involvement. One case of glandular tularemia had pneumonia. The pulmonary involvement varied from typical lobar and bronchopneumonia to pleurisy with effusion.

There was involvement of the mouth or pharynx in 12 of the typhoidal cases (25 per cent). Usually these patients had ulcerative pharyngitis and the appearance of the tularemic lesion was noted to closely resemble a diphtheric membrane in a number of instances.

Renal involvement was the most serious complication. Six of the 11 fatal cases were demonstrated to have the pathologic lesion known as lower nephron nephrosis and all died with oliguria, acidosis, and azotemia. On occasion, these patients seemed to improve in regard to their septic state but could not survive the effects of renal shutdown. In the earlier series of 169 patients acute renal failure was also noted to occur not infrequently, and was associated with hypoglycemia. In the present series no data relative to hypoglycemia was available. Renal failure is discussed more fully in a later section.

LABORATORY DATA

The hematologic data obtained on these patients is compiled from single blood counts obtained from each patient on admission to the hospital. Subsequent counts were not analyzed. In the vast majority the blood count was taken while the patient was in the acute stage of the illness. The total WBC count under these conditions was found to have a wide range—from 3,000 to 24,000, (Mean 11,000). In those cases with leukocytosis there was a definite neutrophilic preponderance. Marked leukocytosis was rarely found and normal blood counts were common. A mild anemia (11.8 gm. Hb. average) was usually recorded on admission.

Agglutinations were done on all cases except those who died before the disease was suspected (4). In general, the agglutination for tularemia was not positive before the beginning of the second week. The titer rose progressively, usually to 1:1280 or more by the third or fourth week. In 10 cases agglutinations were done from six to twenty-seven weeks after the onset of the illness. In all of these, titers were 1:2560 or more, and in one case was 1:10240. Unfortunately, it could not be determined just how long the titers remained significantly elevated.

Agglutinations for brucella, typhoid, paratyphoid, and typhus were also performed one or more times in all but 12 cases. There was almost no significant cross agglutination with *B. abortis* although such is ordinarily thought to occur frequently. In only 5 cases was there a titer for *B. abortus* of 1:160 or more. In one case a high titer of 1:5120 for brucella caused confusion in the diagnosis. An absorption test was done, however, which proved the diagnosis to be tularemia. In all other cases of conflict the tularemia titer was found to rise while the brucella titer subsequently fell. Other febrile agglutinations were never of high enough titer to cause confusion. Treatment was not found to alter the trend of tularemia agglutinations as far as could be determined. An occasional high heterophile (Paul-Bunnel) agglutination was encountered.

DEATHS

In the analysis of 169 cases of tularemia seen from January 1934, to January 1948, there were 53 deaths (all autopsied) or a mortality of 33 per cent. In the present series of 147 cases, 11 died or a mortality rate of 7.5 per cent, illustrating how the prognosis has changed with the development of specific antibiotic agents.

The typhoidal form was the most fatal; 10 of the 53 patients died, (19 per cent). The other death occurred in an ulceroglandular case. The average age of those dying was fifty-three years (range 17 to 79 years).

The duration of illness varied from six to thirty-nine days with a mean of fourteen days and a median of ten days. Since agglutinations for tularemia do not occur before the seventh to fourteenth day of illness, the patient may die before the serologic test can become useful. In only 2 cases was the diagnosis established before death. In 5 cases the diagnosis was suspected and agglutinations were performed with a negative result. Four times patients died before the diagnosis was suspected.

In the one case in which death occurred

after thirty-nine days of illness, the cause of death was a rapidly growing retrolaryngeal abscess. This abscess came on after the patient was afebrile and improving, but grew so rapidly that respiratory obstruction and death occurred before the abscess was recognized.

All the other cases were dramatic infections. These patients died in one of two ways. Some died rapidly (earliest in six days), apparently solely of overwhelming toxemia. In this group there were 4 cases and none of them received streptomycin. Two received penicillin and sulfonamides with no effect.

The other 6 cases, interestingly, expired in a clinical state of uremia and at autopsy were found to have the lower nephron lesion. All of these patients were desperately ill throughout the course of their illness, although in 2 cases fever was normal at the time of death, apparently as a result of streptomycin therapy. Case 521075, a 57-year old colored male, is cited as an example of severe tularemia terminating in renal failure. This patient was taken suddenly ill ten days prior to death with abdominal pain, backache, and fever. After being ill for four days with these symptoms he was referred to this hospital in a state of semistupor, dehydration, oliguria, and with a fever of 102° which rose to 107° on the same day. Initial blood chemistries included an NPN of 85 mgm. per cent and a creatinine of 5.1 mgm. per cent. Despite streptomycin and appropriate parenteral fluids and supportive measures the patient expired six days later after continued oliguria and with a terminal NPN of 174 mgm. per cent and a creatinine of 14 mgm. per cent. At autopsy there were foci of necrosis in the lungs, peribronchial lymph nodes, spleen, liver, and bone marrow consistent with tularemia. The kidneys demonstrated tubular changes of lower nephron nephrosis and other significant pathologic changes were absent. There was no known vector and the tularemia agglutination was negative.

The other 5 cases had similar clinical laboratory and autopsy findings. The pathogenesis of the renal lesion is not clear from the available data, as the patients more often than not were uremic on admission. The possible role of hypotension or drugs given prior to entry unfortunately could not be established.

The pathologist at this hospital in performing the 53 autopsies of the earlier series and the 11 of the present series noted the frequent occurrence of areas of necrosis involving the liver, spleen, and upper abdominal lymph nodes. These changes resembled those frequently encountered in tuberculosis. However, their occurrence simultaneously in these organs in a patient dying of a febrile illness of two weeks' or less duration came to be relied upon as a highly dependable diagnostic combination of findings in fatal tularemia. This has come to be known as the "Mathews Triad" at this institution. In the early series confirmation of the diagnosis was almost always afforded by guinea pig inoculation. In the current series guinea pig inoculation failed to confirm the diagnosis in most cases and this has been attributed to the use of streptomycin.

Table 2 illustrates the frequency with

TABLE TWO
AUTOPSY FINDINGS

No.	Case	Age	Race	Sex	Bone Marrow	Liver	Spleen	Lung	Kidney (Liver)	Lymph Nodes	Day of Death
1	504777	40	C	M	+	+	+	+	+	+	* 20
2	521075	57	C	M	+	+	+	+	+	+	* 10
3	505742	66	C	F	+	+	+	+	+	0	* 14
4	503005	43	C	M	Not Done	+	+	+	+	0	* 12
5	517859	41	C	F	Not Done	+	0	0	+	0	* 39
6	519402	63	C	M	+	0	+	0	0	+	9
7	522134	66	C	M	Not Done	+	+	+	Not Done	0	6
8	508139	79	C	M	0	+	+	0	0	+	17
9	527959	17	C	M	Not Done	+	+	0	Not Done	0	*‡ 8
10	507909	46	C	M	+	+	+	0	+	+	7
11	506742	60	C	M	0	+	+	0	0	0	‡ 7

* Indicates streptomycin therapy
† Had acute renal failure clinically
‡ Injected guinea pig died—Tularemia

AUTOPSY SUMMARY

Organ	Bone Marrow	Liver	Spleen	Lung	Kidney	Lymph Nodes
Positive	5	10	10	5	6	5
Negative	2	1	1	6	4	6
Not Examined	4	0	0	0	1 *	0

* Had Acute Renal Failure Clinically

which the liver, spleen, and lymph nodes as well as the bone marrow, lungs, and kidneys were involved.

TREATMENT

Prior to 1946, no specific drugs for tularemia existed and agents such as neoarsphenamine, mercurochrome, and sulfonamides were used with poor success. During the present series streptomycin and its analogue, dihydrostreptomycin, were widely accepted as the treatment of choice, and almost every case received one or the other drug. Since 1949, the latter has been used exclusively in this hospital. Penicillin was occasionally used, as were the broad spectrum antibiotics in conjunction with streptomycin.

Streptomycin was given in a dosage of from 1 to 3 grams daily. Divided doses of 250 to 500 mgm. were given usually, though sometimes a single daily dose was used. Generally the fever fell by lysis in three days, but sometimes fell by crisis. The duration of fever seemed to be the best indication of the response to treatment. Fever varied from one to forty days while on treatment, and the longer morbidity was associated with suppurative lymph nodes. No greater benefit was observed when the drug was given in dosage above 2 grams, and it is believed from this study that 1 gram daily represented a minimum adequate dose.

Chloramphenicol and chlorotetracycline were used occasionally alone or in combination with streptomycin. Chloramphenicol seemed to cause defervescence as effectively as streptomycin in the 10 instances in which it was used alone. Chlortetracycline was used too seldom to evaluate. The duration of symptoms was usually shorter in those that were treated early, despite the fact that these often had high fever and severe symptoms. Apparently, if the organism is given time to localize extra days of drug therapy are required. No accurate conclusions can be drawn as to the number of days treatment should be continued after the patient is afebrile, but in these cases one week of treatment was adequate.

SUMMARY

Tularemia is a relatively common infection in man in northwest Louisiana. It is principally a febrile disorder with severe constitutional symptoms, but may be seen as a disease of only regional lymphadenopathy. The vectors discovered were ticks, rabbits, and rarely squirrels. It is to be emphasized that, more often than not, no vector was established (59 per cent of all cases).

The ulceroglandular form was the most common type of the disease accounting for 46 per cent of cases. Next most frequent was typhoidal with 36 per cent, then glandular (15 per cent), and oculoglandular (3 per cent).

The mortality rate was 7.5 per cent. Compared to the earlier survey in which 33 per cent died, the patients of the recent series fared well, demonstrating the effectiveness of streptomycin. Chloroamphenicol, when used, also seemed to be a good drug. The typhoidal variety of the disease bore a high mortality rate (19 per cent) despite the use of streptomycin. In general defervescence occurred in three days when one or more grams of streptomycin were given daily.

Acute renal failure was the most serious complication and it heralded death in the majority of the fatal cases.

CONCLUSIONS

1. Any patient, regardless of age, race, sex, or vector history, who is ill with a fever of undetermined origin, should bring to mind tularemia in the differential diagnosis, especially in northwest Louisiana. If necessary, treatment may be begun before the diagnosis is confirmed by the agglutination series since the disease may run a fatal course before the antibodies appear.

2. Streptomycin is an effective drug in this disease, as shown by a marked reduction in the mortality rate (33 per cent to 7.5 per cent) in two comparable studies at this institution.

3. Acute renal failure is frequently an important contributing factor to death in fatal cases.

———o———

THE PHYSICIAN, THE STATE DEPARTMENT OF HEALTH AND MORBIDITY REPORTING

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NEW ORLEANS

The primary reason for morbidity reporting by physicians, to the State Department of Health, is to alert the Department to the occurrence of diseases so that preventive and control measures may be instituted and to make the other physicians in the area aware of the occurrence.

Morbidity data disclose the prevalence in the state, or parish, of diseases dangerous to the public health, especially epidemic diseases. Early reporting by physicians is the first step in applying preventive and control measures. When diseases are not reported, the public health is placed in jeopardy; if reporting is delayed, the effectiveness of control measures is lessened. It is clear, therefore, that close collaboration between private practitioners and public health officials is essential for the protection of the health of our people.

When the disease reported is investigated and controlled, the data collected during the occurrence is assembled, studied and interpreted. This data is the raw material used by the Health Department to plan more effective programs for the prevention and control of the disease.

The collection of morbidity data by the United States Public Health Service was authorized by an Act of Congress in 1878. One year later, Congress appropriated money for the collection and publication of reports of notifiable diseases, the principal notifiable diseases being smallpox, plague, cholera, and yellow fever. In 1893, a Congressional act provided for weekly collection of morbidity data from state and municipal authorities. To facilitate this collection, Congress by Act in 1902, directed the Surgeon General of the Public Health Service to provide forms for the collection, compilation and publication of morbidity data.

About 1914, state health officers were designated as Collaborating Epidemiologists and local officials, usually local health officers, were appointed as Assistant Collaborating Epidemiologists.

In 1919, at the request of the State and Territorial Health Authorities, the Public Health Service started supplying to all states, who requested it, report cards with penalty mailing privileges. Some states have not availed themselves of the use of these prepared report forms, but instead have used forms of their own devising and printing. From 1941 and until recently, Louisiana was one of these states.

This year, Louisiana was forced to revise its practice. Today, in this world of strife, tension and catastrophes, a reporting system that will work smoothly and effectively in times of emergency is a necessity. The more routinized and standardized a practice is, the more apt it is to function properly under stress. Complete, accurate, standardized reporting through established channels is of increasing importance as the threat of biological and atomic warfare approaches reality. For many years, the State Board of Health has determined the diseases which Louisiana physicians are to report and has developed, printed, and distributed forms for the reporting of these diseases.

On January 1, 1956, the State Department of Health abandoned its report forms and requested the Public Health Service to provide a supply of morbidity report forms for use by physicians. This will bring Louisiana practice in accord with the morbidity reporting practices of most of the States and provide for the standardization so gravely needed.

The new report forms have been received by the State Department of Health. These have been bound into books of 25

From the Section of Epidemiology, Louisiana State Department of Health.

PHS-2430
9-55

CONFIDENTIAL CASE REPORT

Form approved.
Budget Bureau No. 68—R581.

DISEASE	DATE OF REPORT	DATE OF ONSET
PATIENT'S NAME	AGE / SEX	RACE
ADDRESS — STREET NO. (R. F. D. if rural)	APT. NO.	
CITY OF COUNTY		
NAME OF HOUSEHOLDER		
REMARKS		
NAME OF REPORTING PHYSICIAN, HOSPITAL, OR OTHER AUTHORIZED PERSON		
OFFICE ADDRESS		
REPORT BY NUMBERS OF CASES ONLY:		

USE REVERSE SIDE FOR SPECIAL INFORMATION FOR TB AND VD

☐ CHECK HERE IF ADDITIONAL CARDS ARE NEEDED

Figure 1.—Front—Confidential Case Report Card.

TUBERCULOSIS

IS THIS CASE REPORTED AS A RESULT OF AN X-RAY SURVEY? YES ☐ NO ☐

IF THIS CASE IS BEING REPORTED AFTER DEATH, GIVE DATE OF DEATH.

FORM AND EXTENT	ACTIVITY STATUS	BACTERIAL STATUS
PULMONARY		POSITIVE ☐
MINIMAL ☐	ACTIVE ☐	NEGATIVE ☐
MODERATELY ADVANCED ☐		UNKNOWN ☐
FAR ADVANCED ☐	ACTIVITY UNDETERMINED	BY—
OTHER, SPECIFY_____	PROBABLY ACTIVE ☐	SMEAR ☐
NONPULMONARY, SPECIFY_____	PROBABLY INACTIVE ☐	CULTURE ☐
_____	INACTIVE ☐	ANIMAL INOCULATION ☐

VENEREAL DISEASES

SYPHILIS (Check stage)	OTHER VENEREAL DISEASE (Check tpye)	
☐ PRIMARY OR SECONDARY	☐ GONORRHEA	HAS THIS PATIENT BEEN INTERVIEWED FOR CONTACTS?
☐ EARLY LATENT (Under 4 years duration)	☐ CHANCROID	
☐ LATE LATENT (Over 4 years duration)	☐ GRANULOMA INGUINALE	
☐ LATE—Type	☐ LYMPHOGRANULOMA VENEREUM	☐ YES ☐ NO
☐ CONGENITAL		

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE—Public Health Service GPO: 1955—O-364475

Figure 2.—Back—Confidential Case Report Card.

cards each and a supply has been mailed to each physician licensed to practice medicine in Louisiana. The form entitled "Confidential Case Report", is printed on a 3″ x 5″ card (Figure 1—Front; Figure 2—Back) and is to be mailed by the physician when completed in a sealed, penalty privilege envelope, to the local health department.

The list of Reportable Diseases for Louisiana as established by the State Board of Health is as follows:

REPORTABLE DISEASES

GROUP 1—**BACTERIAL**

1. Brucellosis (Undulant Fever)
2. Diphtheria
3. Meningococcal Meningitis and Meningococcemia
4. Salmonellosis (includes Paratyphoid and all other Salmonella)
5. Pertussis (Whooping Cough)
6. Rheumatic Fever
7. Shigellosis
8. Streptococcal Sore Throat (includes Scarlet Fever)
9. Tetanus
10. Tuberculosis—Pulmonary
11. Tuberculosis—Other Types (Specify)
12. Tularemia
13. Typhoid Fever

VIRUS

14. Infectious Encephalitis (Primary Virus Mosquito-borne)
15. Infectious Hepatitis (includes Serum Hepatitis)
16. Measles
17. Poliomyelitis—Paralytic
18. Poliomyelitis—Non-Paralytic
19. Rabies in Man

RICKETTSIAL

20. Rocky Mountain Spotted Fever
21. Typhus Fever (Endemic)

PROTOZOAN

22. Amebiasis

PARASITIC

23. Trichinosis

VENEREAL

24. Chancroid
25. Gonorrhea
26. Granuloma Inguinale
27. Lymphopathia Venereum
28. Ophthalmia Neonatorium (Gonorrheal Ophthalmia)
29. Syphilis

OTHER

30. Cancer
31. Occupational Diseases (Classify by Cause)
    Report Dermatoses only if two or more cases)

GROUP 2—**ANY case of UNCOMMON DISEASE**

32. Actinomycosis
33. Anthrax
34. Botulism
35. Cholera
36. Dengue
37. Glanders
38. Histoplasmosis
39. Leprosy
40. Leptospirosis (includes Weil's Disease)
41. Malaria
42. Plague
43. Psittacosis
44. Q. Fever
45. Rat-Bite Fever
46. Relapsing Fever
47. Smallpox
48. Toxoplasmosis
49. Trachoma
50. Typhus Fever (Epidemic)
51. Yellow Fever

GROUP 3—**Report when occurring in UNUSUAL NUMBERS (Need not be reported individually by name)**

52. Ascariasis
53. Chickenpox
54. Conjunctivitis, acute infectious (pink eye)
55. Diarrhea of new born (epidemic)—if 2 or more cases
56. Food Poisoning
57. German Measles
58. Hookworm
59. Impetigo Contagiosa
60. Influenza
61. Mumps
62. Ringworm of the Scalp
63. Scabies

GROUP 4—**Reportable only by Laboratory Examination**

64. Rabies in Animals

Certain of the diseases listed above are to be reported on an individual basis with adequate identifying data; certain others are to be reported only when they occur in unusual numbers. Spaces are provided on the new report form for notification concerning both types of diseases.

The Department of Health is studying the use of this new form and the development of practices which will result in earlier, more complete reporting. Suggestions from practicing physicians would be helpful.

The State Health Officer is the Public Health Service collaborating epidemiologist for Louisiana, while the Directors of the local health units are usually the assistant collaborating epidemiologists.

To apply prevention and control measures early, the parish health unit must be advised of the occurrence of a reportable disease as quickly as possible. The easiest and quickest way for a physician to report is to telephone the local health unit. Certain specific information, depending on the disease reported, will then be requested by the person handling this call. The Health Unit personnel begin the use of the information immediately. Simultaneously, the same information is forwarded to the Section of Epidemiology, State Department of Health, where a central control record and surveillance system is set up to assist the local health unit in the establishment of all necessary control procedures.

When the presumptive clinical diagnosis is confirmed by laboratory procedures, the information concerning the disease is referred to the Tabulating and Analysis Section for processing, which includes a report of the occurrence of the disease to the National Office of Vital Statistics.

To be most useful, every space on the report form should contain pertinent and appropriate information.

SUMMARY

The State Department of Health is using a new type morbidity report form. These forms have been distributed to physicians. Physicians should advise the Parish Health Unit in their parish by report form and by telephone of the occurrence of any reportable diseases. The parish and state departments of health, by these reports, will be alerted to the occurence, in the community, of diseases dangerous

to the public health. They will immediately investigate the occurrence and institute such control and surveillance measures as are indicated. The data collected during the investigation will be assembled, studied and interpreted and the lessons learned applied to the development of more effective preventive and control measures. The data will also be forwarded to the Tabulating and Analysis Section of the Department and to the National Office of Vital Statistics where it will be tabulated and published. These published reports and the reports of investigations by the Section of Epidemiology of the State Department of Health are available to physicians on request. This statistical information is useful to physicians in medical practice as well as to physicians engaged in medical research.

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THE CONTROL OF POISONING

The control of poisoning is a medical problem which is increasing in frequency and diversity. When poisoning has occurred the immediate situation involves recognition and therapy. The extent of poisoning can be judged by the occurrence of 1440 cases in the United States in 1952, in which the death certificate gave accidental poisoning as the cause of death. Accidental poisoning kills 500 children over the nation annually. Among these, about one third result from drugs. It has been reported that accidental chemical poisoning is the third leading cause of death in children under six in New York City, and more children die from such causes than from measles, German measles, rheumatic fever, streptococcal infections, poliomyelitis, diphtheria, whooping cough and scarlet fever. Children's death rates from the ingestion of poison are four times higher in the United States than in England.

It is estimated that although 75 per cent of all reported cases may be treated by gastric lavage, it is still necessary that the physician have, whenever possible, access to information concerning the pharmacology of poisons and adequate plans for therapy.

A report by Bernard E. Conley, Secretary of the AMA Committee on Toxicology indicates some 250 thousand trade name substances are now in the market. The extent to which any one of these may become a source of poisoning will be an unknown quantity for the physician. Recognition of this situation led to the establishment of the first Poison Control center in Chicago in 1953. This led to the establishment of similar centers in many metropolitan areas over the United States. In New Orleans, to aid in these problems, the Office of the Coroner of Orleans Parish maintains a Poison Information Bureau. This Bureau is for physicians only and only information is offered; treatment is not given. This service may be obtained by calling New Orleans, GAlvez 6100 or GAlvez 2863 any time of the day or night. These pathologists make available their experience and the resources of their library of toxicology.

In association with the activities of certain of these centers manuals have been produced which are available and which give valuable information for the physician.

Even though mechanical removal of the poison by lavage, or attempted neutralization of the effect of the poison by physiological means, may be energetic and well directed, still the results as the death totals show leave much to be desired. Obviously, prevention and control are far

better than treatment. In the matter of prevention the problem spreads beyond the medical field alone and becomes one of significance in all phases of community activity — engineering, industry, public health, sanitation, education, law enforcement, housing, social work, and investigative research.

It is necessary that the public become conscious of poisoning in general as a problem, in order that the toxic potentialities of a particular product may be manifest from the time it leaves the engineering phase until it reaches the physician in the industry or the household where its danger may become manifest. It is obvious at the present time that the weakest point in this chain of circumstances is the household.

The Board of Trustees of the American Medical Association has requested the Committee on Toxicology to draft recommended legislation on the labeling of any chemicals possibly harmful, which are not now regulated. Such a law, if enacted by a sufficient number of states, would give legal assistance in poisoning control, and would also focus attention, generally, upon poisoning as a community hazard.

The most effective control of the problem, however, will only result from proper education as to the proper handling and storing of all such potentially toxic substances.

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ORGANIZATION SECTION

The Executive Committee dedicates this section to the members of the Louisiana State Medical Society, feeling that a proper discussion of salient issues will contribute to the understanding and fortification of our Society.

An informed profession should be a wise one.

1957 ANNUAL MEETING

At a meeting of the Committee on Arrangements held February 20, 1957, Dr. J. O. Weilbaecher, Jr., Chairman, announced that final plans were ready for the State Society meeting in May. Reports of subcommittee chairmen were received and budget expenditures were reviewed. Progress to date indicates promise of a most successful meeting. Dr. Weilbaecher has asked for keen cooperation of all committeemen with their respective chairmen in order to accomplish their anticipated plans.

Essayists will be asked to submit to the Secretary-Treasurer a summary or outline of their topic in order to aid in the publicity for this meeting. A careful outline will do much to expedite the work of the committee on publicity and assure adequate press coverage for our meeting.

All members attending the meeting are urged to participate in all functions. Members are particularly urged to attend as many of the scientific sessions as possible and to inspect the technical and scientific displays.

The physical plan for the placing of technical exhibits will be somewhat different this year. When passing these exhibits, members are strongly urged to visit with representatives of these commercial firms whose interest in the State Society is evidenced by their participation in the meeting. These exhibitors do much for the Society by helping to defray a large part of the financial burden of having a state meeting. Reciprocal courtesy in visiting with them does much to encourage them to maintain interest in the Society and at the same time doctors are greatly benefitted by valuable information furnished by these companies.

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Inactive

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Secretary: Dr. Lewis I. Post, 415 Huey P. Long Avenue, Gretna

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Inactive

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EIGHTH DISTRICT MEDICAL SOCIETY
President: Dr. A. J. Ochsner, II, 2015 Simmons Street, Alexandria
Secretary: Dr. W. R. Aderhold, 909 Sixth Street, Alexandria

NOTABLE INCREASE IN HEALTH INSURANCE COVERAGE

Americans who are covered by health insurance policies written by insurance companies received a total of $1.5 billion in benefits for the first nine months of 1956, the Health Insurance Insti-

tute reported. This figure, the Institute said, represents an 18% increase in benefit payments over the comparable period for 1955, and is based upon a survey of companies in the United States handling health insurance policies.

From January through September 1956, persons covered under group health insurance policies received a total of $1.1 billion in benefits, a gain of 19.6% while those protected under individual insurance policies were paid over $450 million, or 12.5% over 1955. Both systems of coverage, explained the Institute, are designed by insurance companies to help the insured pay the hospital and doctor bills incurred through illness, or to help replace income lost through sickness and disability.

Payments by insurance companies to defray hospital care expenses, the Institute further reported, in listing the benefits by type of service, amounted to over $669 million, including major medical benefits, with $488 million going to persons covered under group programs, and $181 million paid to persons holding individual policies.

Surgical expense benefits, which help pay for the cost of operations and surgeon's fees, amounted to more than $273 million, including major medical benefits, with $216 million received by persons protected under group policies, and $57 million paid by insurance companies to those holding individual surgical expense policies.

To help cover the cost of medical care and treatment other than surgery, the companies paid out a total of $48 million to people included under medical expense and major medical expense insurance policies. Benefits for group medical policies amounted to $40 million, while payments under individual policies came to $8 million.

A fourth type of coverage, available only from insurance companies, was also reported on in the survey. Benefit payments to persons protected against loss of income due to sickness or disability came to over $519 million, $337 million paid to persons insured under group plans, and $181 million going to those protected by individual policies.

Persons protected under major medical expense policies alone received over $44 million by the third quarter of 1956, with over $42 million paid out to those people covered by group policies, and individual policyholders receiving a total of almost $2 million. Introduced by the insurance business in 1948, major medical expense is designed as an "across-the-board" health insurance coverage, to help absorb the cost of major, or catastrophic illness. Policies are written to supplement the basic hospital, surgical, and medical coverages, and also as a non-supplemental medical care insurance, both of which include deductible and co-insurance features.

Payments for the specific services rendered for medical care and treatment which are covered under major medical programs were:

Hospital	$21,578,000
Surgical	12,575,000
Medical	5,231,000
Nursing Services	2,841,000
Drugs	824,000
Other (including ambulance, transportation, etc.)	824,000

In releasing the results of the survey of health insurance benefit payments made by insurance companies throughout the country, the Health Insurance Institute stated that the continued growth of voluntary health insurance demonstrates the need and desire of the American people to protect themselves against the cost of illness. There are over 60 million persons today covered by some form of health insurance through insurance company programs, which is over half of the total insured population.

The Health Insurance Institute is the central source of information for the nation's insurance companies serving the public through health insurance.

MEDICAL NEWS SECTION

CALENDAR

PARISH AND DISTRICT MEDICAL SOCIETY MEETINGS

Society	Date	Place
Calcasieu	Fourth Tuesday every other month	Lake Charles
East Baton Rouge	Second Tuesday of every month	Baton Rouge
Morehouse	Third Tuesday of every month	Bastrop
Natchitoches	Second Tuesday of every month	
Orleans	Second Monday of every month	New Orleans
Ouachita	First Thursday of every month	Monroe
Rapides	First Monday of every month	Alexandria
Sabine	First Wednesday of every month	
Tangipahoa	Second and fourth Thursdays of every month	Indepencence
Second District	Third Thursday of every month	
Shreveport	First Tuesday of every month	Shreveport
Vernon	First Thursday of every month	

RUDOLPH MATAS LECTURESHIP SPONSORED BY NU SIGMA NU

The tenth annual Rudolph Matas Lectureship, sponsored by the Tulane University Beta Iota Chapter of Nu Sigma Nu, will have as its guest speaker this year Dr. Charles C. Higgins, who will speak on "Exstrophy of the Bladder; Review of 155 Cases".

This lecture will be delivered at 4:00 p.m., Friday, April 12, 1957, in Hutchinson Memorial Auditorium, Tulane University, 1430 Tulane Avenue, New Orleans.

Dr. Charles Clare Higgins received his Medical Degree from Washington University and is Head of the Department of Urology, Cleveland Clinic Foundation Hospital, Cleveland, Ohio. He is Chairman of the Board of Governors of the American College of Surgeons and is a member of the American Board of Urology, American Urological Association, American Association of Genito-Urinary Surgeons, Clinical Society of Genito-Urinary Surgery and the Sociedad Venezolana de Urologica.

Following the lecture there will be a banquet for members and alumni of Nu Sigma Nu.

NATIONAL RESUSCITATION SOCIETY, INC. CLINICAL HYPOXIA

Monthly intensive week end courses in clinical hypoxia are held under the auspices of the National Resuscitation Society, Inc. (formerly, Society for the Prevention of Asphyxial Death, Inc.), matriculation fee $50. These courses feature laryngoscopy and intubation for the prevention and treatment of respiratory and cardiac arrest, and will be held April 5-6, May 3-4, and June 7-8. For details and application form write, Secretary, National Resuscitation Society, Inc., 2 East 63rd Street, New York 21, N. Y.

LOUISIANA HEART ASSOCIATION ANNUAL MEETING — SCIENTIFIC SESSION CONFEDERATE MEMORIAL HOSPITAL

Shreveport, Louisiana
May 15, 1957

9:00 A. M.
Symposium
"Prevention and Management of Heart Failure"
Dr. Joe E. Holoubek, Shreveport, President, Louisiana Heart Association, presiding.

9:00 A. M.
"General Principles and Their Application"
Dr. Harold Jacobs, Lafayette

9:30 A. M.
"Clinical Use of Digitalis"
Dr. William Luikart, Baton Rouge

10:00 A. M.
"Use of Other Drugs"
Dr. John Worley, Alexandria

10:30 A. M.
"Question and Answer Period

10:50 A. M.
INTERMISSION

11:00 A. M.
Special Lecture
"Coronary Disease"
Dr. Robert H. Bayley, Professor of Medicine, Oklahoma University School of Medicine

12:00 Noon
"Bacterial Endocarditis"
Dr. David Buttross, Lake Charles

12:30 P. M.
Question and Answer Period

12:45 P. M.
LUNCH
Speaker
Dr. H. S. Mayerson, Chairman, Department of Physiology, Tulane University and vice-president, Louisiana Heart Association
Dr. George Anderson, president-elect, Louisiana Heart Association, presiding.

2:30 P. M.
"Evaluation of Surgical Risk in Patients With Heart Disease"

Dr. Herbert Tucker, Shreveport

3:00 P. M.

Special Lecture

"Myocardial Revascularization By a New and Innocuous Approach"

"A Summary of the Present Status Of Valvular Surgery Illustrated by Cinematography"

Dr. Robert Glover, Director, Cardiovascular Research Laboratory, Presbyterian Hospital, Philadelphia

4:00 P. M.

Special Lecture

"The Diagnosis and Management of the Child with Congenital Heart Disease".

Dr. Robert E. Wells, Attending Cardiologist, Attending Pediatrician, St. Christopher's Children's Hospital; Assistant Professor of Pediatrics, Temple University

5:00 P. M.

ADJOURNMENT

7:30 P. M.

"Anaesthesia for Cardiac Surgery"

Dr. John Adriani, Director, Anaesthesiology, Charity Hospital, New Orleans and Professor of surgery (anaesthesia) Tulane and LSU schools of medicine

Dr. George Miles, clinical instructor in surgery, LSU school of medicine

WOMAN'S AUXILIARY TO THE LOUISIANA STATE MEDICAL SOCIETY

The Woman's Auxiliary to the Orleans Parish Medical Society held its monthly meeting, Wednesday, February 13, at the Orleans Club. Mr. Scoop Kennedy, Staff Member of WDSU, was the guest speaker.

In the receiving line were Mrs. Abe Golden, president, and Honorary members of the organization, Mms. Herman B. Gessner, Chaille Jamison, Marcus Koelle, William Kohlmann, John W. Linder, John Musser, Ramon N. Oriol, Cassius Peacock, Mendel Silber, C. Grenes Cole, and Roy B. Harrison.

Those on the standing Hostess Committee are Mms. Peter Everett, Aynaud Hebert, L. Sidney Charbonnet, Joseph Hountha, George Hauser, Ashton Thomas, Benjamin Morrison, John Gooch, Abram Goldsmith, William Rein, Louis J. Dubos, W. C. Rivenbark, Merrell O. Hines and George B. Grant.

Mrs. Robert C. Kelleher
Publicity chairman

MID-YEAR EXECUTIVE BOARD MEETING

Mrs. W. A. K. Seale, President, Woman's Auxiliary to the Louisiana State Medical Society, presided at the Mid-Year Executive Board Meeting, which was held at the Bentley Hotel, in Alexandria, on January 22, 1957.

A panel on the problems of presidents of big, little, old, and new auxiliaries followed the business session. The participating members were Mrs. Harold J. Quinn, Shreveport, Caddo Auxiliary president, Mrs. H. Wayne Richmond, Oakdale, past-president of the Allen Parish Auxiliary, and Mrs. Eugene Countiss, president-elect of the Orleans Parish Auxiliary. Mrs. Boni J. De Laureal, president-elect, was moderator.

The following were elected to the Nominating Committee: Mrs. Henry Jolly, Baton Rouge, Chairman; Mrs. Robert Rougelot, New Orleans; Mrs. Creighton Shute, Opelousas; Mrs. Roy Carl Young, Shreveport; Mrs. Arthur Long, Baton Rouge; Mrs. A. N. Evans, Alexandria; Mrs. Ben Cobb, Monroe.

At a luncheon following the executive session Dr. Paul D. Abramson, President, Louisiana State Medical Society, addressed the board and participating members on the importance of good public relations.

Mildred G. Carter,
Press and Publicity Chairman.

BOOK REVIEWS

Nerve Blocks; by John Adriani M. D., Springfield, Illinois, Charles C Thomas, 1954, Pp. 265. Price $6.50.

This book is written in outline form and includes the most commonly employed blocks. It is well illustrated and is ideal for teaching or reference in regional anesthesia. From the clinicians' and anesthesiologists' viewpoint it is both practical and concise in its approach. It is recommended for the library of all interested in the diagnostic, therapeutic, or anesthetic use of nerve blocks.

CHARLES C. ABBOTT, M. D.

PUBLICATIONS RECEIVED

W. B. Saunders Co., Phila.: The Physician-Writer's Book, Tricks of the Trade of Medical Writing, by Richard M. Hewitt, M. D.; Pediatric Cardiology, by Alexander S. Nadas, M. D.; Clinical Use of Radioisotopes, by William H. Beierwaltes, M. D., Philip C. Johnson, M. D., and Arthur J. Solari, B. S.

Charles C Thomas, Publisher, Springfield, Ill.: Practical Psychiatry for Industrial Physicians, by W. Donald Ross, M. D.; Fundamentals of Clinical Neurophysiology, by Paul O. Chatfield, M. D.; Stress and Strain in Bones, Their Relation to Fractures and Osteogenesis, by F. Gaynor Evans, Ph.D., edited by Otto Glasser, Ph.D.